Cognitive impairment in older workers—a guide to assessment

The UK government plans to abolish fixed retirement age from October 2011. It will become increasingly common for people to be working in their late 60s and even their early 70s. Dementia UK [1] estimates that 1.3% of people aged 65–69 years will have dementia rising to 2.9% for those aged 70–74 years. Lesser degrees of cognitive impairment will affect even more people at these ages. There is therefore likely to be an increasing demand on occupational health specialists to be able to assess older workers with possible cognitive impairment. In an occupational health context, not only is there a need to determine whether cognitive impairment is present but also an impetus to elucidate which cognitive domains are affected in relation to any skills and knowledge required by the person’s occupation.

A clinical approach to assessing cognitive impairment, both acute and chronic, is well established [2]; in an occupational health context, it is chronic rather than acute cognitive impairment which is the main focus. The emphasis will naturally be less on diagnosis, but issues of how it is affecting the person and how they feel about it are important to elicit. Cognitive assessment deserves the same rigorous approach as any other assessment, such as an electrocardiogram. It should be undertaken in a quiet environment with appropriate lighting where interruptions are unlikely to occur. The person being assessed should be asked if she would like a carer or staff member to be present; if someone else is present, they should be asked not to interrupt the assessment or give verbal or non-verbal prompts. The assessor should use a clear audible voice and any hearing aid should be switched on and working. The person being assessed should not be hurried and should also be assured that there is no pass or fail. Establishing rapport is important before testing; cognitive tests are often performed in the context of a more general assessment of the person’s health status. With this regard, particular attention should be paid to mood since subjective memory complaints are common in people with depression.

The first thing to establish is whether significant cognitive decline has occurred. This requires an estimate of previous mental abilities. Sometimes prior ability will have been measured as part of psychometric testing undertaken during the recruitment process. Education and occupation also provide some indication of prior intellectual ability. A direct estimate can be made using The National Adult Reading Test (NART) [3]. The NART is a direct assessment based on irregular phoneme–grapheme correspondences in English for 50 words which provides a reliable estimate of premorbid intelligence quotient (IQ) [4] unaffected by delirium or dementia [5]. The test is only appropriate if the person’s first language is English because it relies on the correct pronunciation of words which cannot be deduced from the way they are spelt (e.g. ‘periscope’—regular pronunciation c.f. ‘peri-cope’—irregular pronunciation). For workers aged <75 years, brief routine screening tests such as the mini-mental state examination (MMSE) [6] are too insensitive due to ceiling effects [7]. Instead, the revised version of the Addenbrooke’s Cognitive Examination (ACE-R) [8] (available for download with scoring instructions) which includes the MMSE items, can be used. This test takes ~20 min to administer. The ACE-R provides a total score but also mental ability domain scores for attention and orientation, memory, verbal fluency (reflecting frontal lobe function), language and visuospatial abilities. Hence, it is useful in identifying specific cognitive skills that are impaired that can be related to the worker’s occupation (e.g. visuospatial abilities, language skills etc). The profile of relative deficits also provides the opportunity to devise changes that work with preserved cognitive strengths and also to consider ways to compensate for areas where cognitive skills are more impaired (e.g. prompts). The ACE-R can also provide a useful baseline for future cognitive assessments as it is more sensitive to change than the MMSE. It provides cut-off scores with a range of sensitivities and specificities. For workers with a NART estimated IQ in the high or high average range, the upper cut-off is favourable, while the lower cut-off should be used for those whose NART estimated IQ is below average.

One cognitive domain that is not well covered by the ACE-R, but which is important in many occupations, is what is termed fluid intelligence, key to problem solving. There are tests of fluid intelligence, but these generally have to be administered by qualified psychologists. If such a psychologist is available to the occupational health service, then this is likely to be assessed in workers who are referred. However, fluid intelligence correlates strongly to lower level mental abilities, especially choice reaction time (CRT). CRT measures the time it takes for a person to choose the correct response to one of several different possible stimuli after it is presented. Fortunately, there is now a free, easy-to-use, computer-based simple and four-CRT programme [9, Windows compatible download available at http://www.ccace.ed.ac.uk/software]. This also provides 25th, 50th and 75th percentiles for different ages, but more detailed age–sex means and confidence intervals for the UK population are available [10].
CRT, in itself, may well be of considerable interest for some occupations: for example, where people are operating machinery or have to make quick decisions.

Combining CRT with ACE-R provides a good basis for detecting cognitive impairment and identifying specific mental ability domains. Together, they take ~30 min to administer. If workers perform significantly less well than expected on these assessments, provisional advice can be framed, but referral on for more detailed neuropsychology testing may be appropriate, especially in borderline cases. Using the ACE-R and CRT should make the experience more positive for the worker being assessed. The ACE-R can be seen as a tool that determines a person’s cognitive strengths as well as any weaknesses, while the CRT is unlike most cognitive tests and is therefore less likely to have any negative associations with school examinations. Moreover, the ACE-R is routinely used in memory clinics, so referral on to clinical services will be helped by having a score, and domain sub-scores, available. Together, these two tests should provide the basis for a fairly comprehensive occupational health-based cognitive assessment, an assessment which is likely to become increasingly needed in the coming years.

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